WHAT IS CLAIMED IS:

1. A method of refolding a first insoluble, recombinant, eukaryotic glycosyltransferase, wherein the glycosyltransferase comprises a maltose binding protein domain (MBD), the method comprising the steps of

(a) solubilizing the insoluble, recombinant, eukaryotic glycosyltransferase in a solubilization buffer; and

(b) contacting the soluble eukaryotic glycosyltransferase with a refolding buffer comprising a redox couple to refold the eukaryotic glycosyltransferase, wherein the refolded eukaryotic glycosyltransferase catalyzes the transfer of a sugar from a donor substrate to an acceptor substrate.

2. The method of claim 1, wherein the first eukaryotic glycosyltransferase is truncated to remove all or a portion of a stem region.

3. The method of claim 1, wherein an unpaired cysteine in the first eukaryotic glycosyltransferase is removed by substitution with a non-cysteine amino acid.

4. The method of claim 1, wherein the first eukaryotic glycosyltransferase is selected from the group consisting of GnT1, GalT1, StIII Gal3, St3GalI, St6 GalNAcTI, Core GalITI, GalNAcT2.

5. The method of claim 1, wherein the first eukaryotic glycosyltransferase further comprises a purification domain selected from the group consisting of a starch binding domain, a thioredoxin domain, a SUMO domain, a poly-His domain, a myc epitope domain, and a glutathione-S-transferase domain.

6. The method of claim 1, wherein the first eukaryotic glycosyltransferase further comprises a self cleaving domain.

7. The method of claim 1, wherein the first eukaryotic glycosyltransferase is expressed in a bacterial host cell as an insoluble inclusion body.

8. The method of claim 1, wherein a second insoluble, recombinant eukaryotic glycosyltransferase is refolded with the first eukaryotic glycosyltransferase.

9. The method of claim 8, wherein a third insoluble, recombinant eukaryotic glycosyltransferase is refolded with the first eukaryotic glycosyltransferase and the second eukaryotic glycosyltransferase.

10. The method of claim 1, wherein the redox couple is selected from the group consisting of reduced glutathione/oxidized glutathione (GSH/GSSG) and cysteine/ cystamine.

11. The method of claim 1, wherein the acceptor substrate is selected from a protein, a peptide, a glycoprotein, and a glycopeptide.

12. The method of claim 1, wherein the first eukaryotic glycosyltransferase is a sialyltransferase.

13. The method of claim 12, wherein the sialyltransferase is selected from the group consisting of StIII Gal3, St3GalI, St6 GalNAcTI.

14. The method of claim 12, wherein the donor substrate is a CMP-sialic acid PEG molecule and the acceptor substrate is selected from a protein, a peptide, a glycoprotein, and a glycopeptide.

15. A recombinant, eukaryotic glycosyltransferase, wherein a stem anchor region and a transmembrane domain are deleted from the recombinant, eukaryotic glycosyltransferase, and wherein the glycosyltransferase is fused in frame to a maltose binding domain.

16. The recombinant, eukaryotic glycosyltransferase of claim 15, wherein all or a portion of the stem region is deleted.

17. The recombinant, eukaryotic glycosyltransferase of claim 15, wherein an unpaired cysteine in the recombinant, eukaryotic glycosyltransferase is removed by substitution with a non-cysteine amino acid.

18. The recombinant, eukaryotic glycosyltransferase of claim 15, wherein the glycosyltransferase is selected from the group consisting of a GnT1 protein, a GalT1 protein, an StIII Gal3 protein, an St3GalI protein, an St6 GalNAcTI protein, a Core GalITI protein, and a GalNAcT2 protein.

19. The recombinant, eukaryotic glycosyltransferase of claim 15, wherein the glycosyltransferase is a GnT1 protein.

20. The GnT1 protein of claim 19, wherein the GnT1 protein is a truncated human GnT1 protein selected from GnT1 Δ35 and GnT1Δ103.

21. The GnT1 protein of claim 19, wherein the GnT1 protein is a human GnT1 protein comprising an unpaired cysteine substitution selected from the group consisting of CYS121ALA, CYS121ASP, and ARG120ALA,CYS121HIS.

22. The recombinant, eukaryotic glycosyltransferase of claim 15, wherein the glycosyltransferase is a GalT1 protein.

23. The GalT1 protein of claim 22, wherein the GalT1 protein is a truncated bovine GalT1 protein selected from GalT1 Δ70 and GalT1 Δ129.

24. The GalT1 protein of claim 22, wherein the GalT1 protein is a bovine GalT1 protein comprising an unpaired cysteine substitution of CYS342THR.

25. The recombinant, eukaryotic glycosyltransferase of claim 15, wherein the glycosyltransferase is an ST3GalIII protein.

26. The ST3GalIII protein of claim 25, wherein the ST3GalIII protein is a truncated rat ST3GalIII protein selected from ST3GalIII Δ28, ST3GalIII Δ73, ST3GalIII Δ85 and ST3GalIII Δ86.

27. The recombinant, eukaryotic glycosyltransferase of claim 15, wherein the glycosyltransferase is a Core1 GalT1 protein.

28. The recombinant, eukaryotic glycosyltransferase of claim 15, wherein the glycosyltransferase is an ST3Gal1 protein.

29. The ST3Gal1 protein of claim 28, wherein the ST3Gal1 protein is a truncated human ST3Gal1protein selected from ST3Gal1 Δ29, ST3Gal1 Δ45, and ST3Gal1 Δ56.

30. The recombinant, eukaryotic glycosyltransferase of claim 15, wherein the glycosyltransferase is an ST6GalNAc1 protein.

31. The recombinant, eukaryotic glycosyltransferase of claim 15, wherein the glycosyltransferase is an GalNAcT2 protein.

32. The GalNAcT2 protein of claim 31, wherein the GalNAcT2 protein is a truncated human GalNAcT2 protein selected from GalNAcT2 Δ40, GalNAcT2 Δ51, GalNAcT2 Δ74 and GalNAcT2 Δ95.

33. A method of remodeling a protein, a peptide, a glycoprotein, or a glycopeptide using the recombinant, eukaryotic glycosyltransferase of claim 15.